Issue Date	Org. Code
2-5-92	W/0S032

## NATIONAL WEATHER SERVICE

## **Engineering Handbook**

Program	Part	Section
EHB-11	03	3. 0

PART 3

AUTOMATIC OBSERVING (EHB-11)

3. Equipment Modification Notes. Modification Notes are the only documents serving to authorize the installation of modifications to instrumental equipment and systems. They provide the step-by-step installation instructions to be followed by authorized personnel in altering circuit and mechanical configurations of equipment. The purpose of any modification is either to enhance safety, maintainability, reliability, or incorporate a change necessitated by an operational requirement not previously designed into the equipment. Most modifications are the result of monitoring field reports relating to equipment failures and operational effectiveness. Other inputs result from suggestions submitted by electronics technicians and regional headquarters staffs. State-of-the-art changes are incorporated through NWS Office of Systems Operations Engineering Division personnel efforts to extend the useful life of equipment and to overcome logistics problems.

Copies of all modification instructions are provided to each electronics technician so he/she will have available the necessary information to perform the modification if equipment is encountered that has not previously been modified. The instructions are issued in numerical sequence by date and by equipment type. In this manner rapid verification by the. technician will determine whether all modification notes have been received and incorporated into the equipment. Missing material should be requested from the NLSC.

Issue Date	Org. Code
2-5-92	W/0S032

## NATIONAL WEATHER SERVICE

# Program Part Section EHB-11 03 3.1

## **Engineering Handbook**

### MODIFICATION INDEX - AUTOB

<u>Number</u>	Date of Issue	<u>Ti tl e</u>
1	August 20, 1979	Capacitor C1 Change in CPU
2	March 13, 1981	Backscatter Visibility Sensor Digitizer
3	March 16, 1981	Backscatter Visibility Processor 1A2A5
	April 17, 1981	Errata Sheet No. 1 to AUTOB Modification No. 2 and No. 3
4	Jul y 1, 1982	Di sable Phase Di scri mi nator



# UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration NATIONAL WEATHER SERVICE Silver Spring, Md. 20910

September 17, 1979

0A/W5141 - JM

TO: All NWS Regional Headquarters, Area Electronics Supervisors,

and Electronics Technicians (EHB-11 Distribution)

FROM: OA/W51 J. M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,

Issuance 79-8

### 1. Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment, Section 3.1, AUTOB Modification No. 1, Capacitor C1 Change in CPU.

### 2. Summary:

Modification No. 1 provides Electronics Technicians with instructions for modifying the Cloud Height Processor (CPU) 1A2A3.

### 3. Effect on Other Instructions:

Pen-and-ink changes to Manual as noted.

4. All completed equipment modifications shall be reported on the H-28 Engineering Progress Report according to EHB-4, Part 2, Pages 2 and 15, Issuance 76-1 revised 8/15/76.

EHB-11 Issuance 79-8



Engineering Division

August 20, 1979

W514

AUTOB MODIFICATION No. 1 (For Electronics Technicians)

SUBJECT : Capacitor C1 Change in CPU

**PURPOSE** : To Prevent CPU from "Running Open"

EQUIPMENT AFFECTED: ALL AUTOB

PARTS REQUIRED One 2.2 mf, 20V, 10% Kemet T310 Capacitor or

Equi val ent

TIME REQUIRED : 1 Work hour

General: This modification is to be performed on all AUTOB 1A2A3 Cloud Height Processor (CPU) Printed Circuit Boards. The capacitor and resistor along with the Clock Generator B7 increases the delay time associated with the "Power Up restart! This modification changes the value of C1 and will eliminate the "running open" condition that has existed.

### PROCEDURE:

- Turn off power to the AMOS and remove the Cloud Height Processor (CPU) Module 1A1A3.Place the printed circuit board on a static free working surface.
- Locate capacitor C1 at coordinate J6. With an appropriate soldering iron (700 degrees F. maximum temperature) remove the 0.1 mfd, 50V capacitor. Replace it with the 2.2 mfd, 20V capacitor supplied. NOTE: The new capacitor is a much larger value and therefore polarity must be observed. The positive end of the capacitor is tied to the R1-C1 junction. This is not marked on the PC board, but can easily be traced. The negative end of the capacitor is connected to return as before.
- Replace the CPU module (1A2A3) and turn on power. Check for correct 3. operation.

### MANUAL CHANGES:

Insert pen-and-ink changes as follows: AUTOB Appendix Page A23, change value of C1 from 0.1 mfd to 2.2 mfd, 10%, 20V. Page A20, locate upper left hand blue box on schematic marked 2 PU. Capacitor C1 is located in lower left-hand corner of this box. Change value to 2.2 mfd.

Attachment: Instructions for Reporting Equipment Modifications.

EHB-11

Issuance 79-8

March 13, 1981

0A/W5141 - JM

T0:

All NWS Regional Headquarters, Area Electronics Supervisors, and Electronics Technicians (EHB-11 Distribution)

I m. Jec

FROM: 0A/W51 - J.'M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11, Issuance 81-2

### 1. Material Transmitted:

Engineering Handbook No. 11 Automatic Observing Equipment, Section 3.1; AUTOB Modification No. 2: Backscatter Visibility Sensor Digitizer.

### 2. Summary:

Modification Note No. 2 provides Electronics Technicians with instructions for installing a modified Backscatter Visibility Sensor Digitizer in the Videograph. This modification has been tested for operational integrity by the Test and Evaluation Division at Sterling, Virginia.

### 3. Effect on Other Instructions:

Pen-and-ink changes to manual plus additions to manual.

### 4. Reporting Equipment Modifications:

Target date for reporting completion of this modification is June 15, 1981.

All completed equipment modifications shall be reported on the Form H-28 (see attached exhibit), Engineering Progress Report; as outlined in EHB-4, Part 2.

EHB-11 Issuance 81- 2



Engineering Division OA/W514

AUTOB MODIFICATION NOTE NO. 2 (For Electronics Technicians)

SUBJECT : Backscatter Visibility Sensor Digitizer

PURPOSE : To Attenuate Noise and Change Threshold Values

of Visibility

EQUIPMENT AFFECTED : ALL AUTOB Systems

PARTS REQUIRED : Modified BVD Module

MOD PROCUREMENT : Parts for this modification will be supplied by the

Engineering Division. A BVD module that has been modified will be shipped to you directly from

Sterling, Virginia.

TIME REQUIRED : One Work Hour

<u>General</u>: This modification to the Backscatter Visibility Sensor Digitizer in the Videograph will attenuate noise and smooth the output with the addition of C7, a 200 uf capacitor, at Pin 2 of B4.

Resistor values R10, R11, R12, and R13 were changed to comply with the FAA's request for the following thresholds of visibility:

0 = 0 to 15/16 Mile 1 = 15/16 to 15/16 Miles

1 = 1-15/16 to 2-7/8 Miles

3 = 2-7/8 to 3-1/2 Miles

### PROCEDURE:

- 1. Turn off Videograph power.
- 2. Open Videograph; disconnect and remove amplifier.
- 3. Move amplifier to suitable work area.
- 4. Remove cover from amplifier (remove six screws).
- 5. Locate and remove BVD module from amplifier.
- 6. Replace with modified BVD module.
- 7. Reassemble, start with Step 4 and reverse procedure to Step 1.
- 8. Verify proper operation. Refer to the latest AUTOB Maintenance Schedule.
- 9. Return old module(s) for modification.

This completes the modification

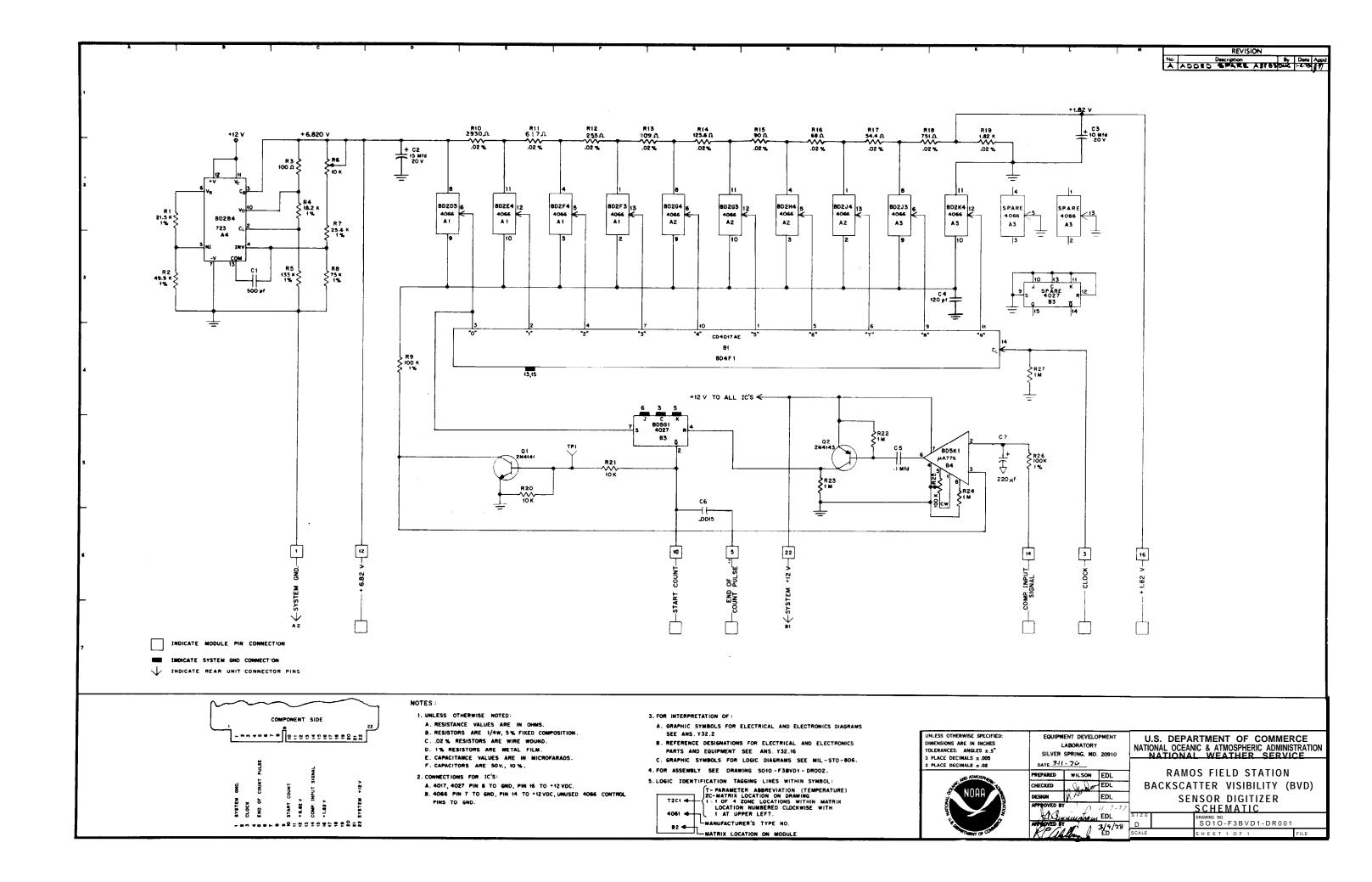
EHB-11 Issuance 81-2 3-13-81

### Manual Changes:

With pen-and-ink, change resistor values of R10, R11, R12, and R13 to read 2930 ohms, 617 ohms, 255 ohms, and 109 ohms, respectively, on Drawing No. 510-1 Back-scatter Visibility Sensor Digitizer of the Fog Detector Videograph Manual. On same drawing, add capacitor C7, 220 uf at Pin 2 of B4; the positive side of capacitor going to OP amplifier and the negative indicating return. Change the values on the Parts List S010-F3BVD1-DR002 to conform with the above. Add Drawings S010-F3BVD-1-DR001 and DR002 to the Videograph Manual.

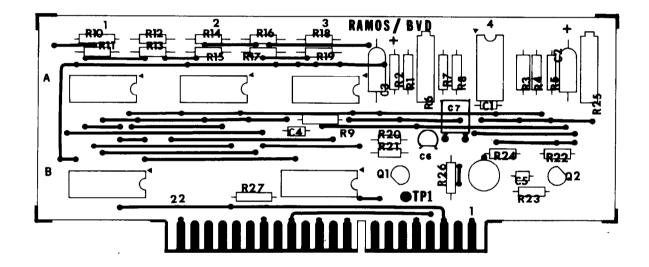
Attachments: DWG. No. S010-F3BVD1-DR001

DWG. No. S010-F3BVD1-DR002



REVISION

No Description By Date Appd



#### NOTE S'

- 1. FOR SIZE AND DRILL INFORMATION SEE DRAWING NO. SO10-F3BVD1-DROO3.
- 2. FOR SCHEMATIC SEE DRAWING NO. SO10-F3BVD1-DROO1.
- 3. COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH GSFCS-722-P-5.
- NON STANDARD REFERENCE DESIGNATORS FOR INTEGRATED CIRCUITS, FIND NO. 2 THRU 6 ARE DESIGNATED IN ACCORDANCE WITH THEIR COORDINATE LOCATION ON BOARD.
- 5. ALIGN INTEGRATED CIRCUITS TAB/OR PIN 1 WITH CORRESPONDING TAB ON BOARD

FIND NO.	ELEC REF DES				REQU	PART OR IDENTIFYING NO.	DWG SIZE	CODE	SPECIFICATION OR MATERIAL
1		PRINTED CIRCUIT BOARD			1	5010-F38VD-0R003	Ω		
2	Βı	INTEGRATED CIRCUIT			/	CD40 7AE		೧೭೭೩	
3	В3	1			1	CD4027A#		O2735	
4	84				1	UA774 =M		02735	
5	AI, 2, 3	1			3	CD4066AE		02735	
6	Α4	INTEGRATED CIRCUIT			1	7230M		07263	
7	ଦ।	TRANSIST	⊅ <b>R</b>		1	2N414		12040	
8	QZ	TRANSIST	≎ <b>R</b>		1	2N4.43		12040	
9	R6	RESISTOR,	IOK, TRIN	IMER	,	79PR .OK			
10	R25	RESISTOR,	IOOK, TR	MMER	1	79 PR .∞K			
U	R3	RESISTOR,	10052, 1/4	W, 5%	- 1	RCO7GF101J			
12	R20, Z1	1	IOK .	5%	2	RCOISE 031			
13	R22 - 24 R27		IMEG	5%	4	RCO7GF OO4J			
14	RI		21.5K	1%		RN6002 75 F			
15	R2		49.3K	1	1	RN60049R9F			
16	R 4		18.2K		1	RNGOD BR ZF			
17	R7		25.5K		1	RN60025R5F	-		
18	R8		75K		7	3502F			
19	R5		133K	ì	- 1	RN600:333F			
50	R9,26		100K	1%	2	RNGODIO - F			
21	RIO		2.930 K	.02%	1	HR175N2.930			
22	RII		617 S	1	1	HR175NG17			
23	RIZ		255 N		- 1	+R175 N 255			
24	RIS		ાજી જ		1	HR175N109			
25	RI4		125.60		1	HR175N125.6			
20	RI5		೨೦ ಬ		- 1	HR175N90			
27	RI6		6852		- 1	HR175N68			
28	RI7		54.452		1	HR175N 54.4			
୧୨	RIB	1	751sl		1	HR175N751			
30	RIS	RESISTOR,	1.82 K, 1/4	W02%	- 1	HR175N1820			
31	cz	CA PACITOR	330f. 5	V		T320€ 336KO	15AS		
32	€5	CAPACITOR	,.001 Uf, E	SOV	:	CSSCIUSK			
33	C3	CAPACITOR			- 1	T320B106M02	OAS		
34	ci	CAPACITOR, 500 PF, 50V			- 1	CZZC 501K			
35	C4	CAPACITOR	IZO Pf. 5	OV.	1	CZZCIZIK			<u> </u>
36		TRANSIPA			1	10383		07047	USED N/ 34
37		TRANSIPAD	·		Z	10353		01047	USED N/Q1,Q2
38	TPI	TEST POIN	7 T		1			1	
39	Cás	CAPACITOF	2 .0015 U	-	1				
+0	<b>∠</b> フ	CAPACITOR	22007		١ ١	1		1	

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES: ANGLES ± 5'
3 PLACE DECIMALS ± .005
2 PLACE DECIMALS ± .002



EQUIPMENT DEVELOPMENT
LABORATORY
SILVER SPRING, MD. 20010
DATE 3-11-76

PREPARED CROOK EDL
CHECKED EDL
DESIGN EDL
APPROVED BY
ALLEN MAN EPL
2 1/77

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE

RAMOS FIELD STATION
BACKSCATTER VISIBILITY (BVD)
SENSOR DIGITIZER
PRINTED WIRING BOARD
ASSEMBLY



## UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration NATIONAL WEATHER SERVICE Silver Spring, Md. 20910

March 16, 1981

0A/W5141 - JM

T0:

All NWS Regional Headquarters, Area Electronics Supervisors, and Electronics Technicians (EHB-11 Distribution)

FROM:

0A/W51 - J. M. St. Clair

SUBJECT:

Transmittal Memorandum for Engineering Handbook No. 11,

Issuance No. 81-3

#### 1. Material Transmitted:

Engineering Handbook No. 14 Automatic Observing Equipment, Section 3.1; AUTOB Modification Note No. 3: Backscatter Visibility Processor 1A2A5.

#### 2. Summary:

AUTOB Modification No. 3, provides Electronics Technicians with instructions on receiving modified Backscatter Visibility Processor 1A2A5 PCB's, and the effect the modified PCB has on the system.

Effect on Other Instructions:

Pen-and-ink changes to manual and additions to manual.

4. Reporting Equipment Modifications:

Target date for reporting completion of this modification is June 15, 1981.

All completed equipment modifications shall be reported on the H-28 Engineering Progress Report, as outlined in EHB-4, Part 2. (See attached exhi bi t.)

> EHB- 11 Issuance 81-3



Engineering Division OA/W514

AUTOB MODIFICATION NOTE No. 3 (For Electronics Technicians)

SUBJECT : Backscatter Visibility Processor 1A2A5

PURPOSE : Change Visibility Reporting Procedure

EQUIPMENT AFFECTED: All AUTOB Systems

PARTS REQUIRED : Spare 1A2A5 Module

MOD PROCUREMENT : This modification will be completed by the Engineering

Division as outlined under Procedure.

SPECIAL TOOLS

REQUIRED : None

TEST EQUIPMENT

REQUIRED : None

TIME REQUIRED : One work hour

General: The modification to the Backscatter Visibility Processor Module 1A2A5 will change the reporting procedure for visibility. Only the latest visibility will be reported. Maximum and minimum values now reported would be eliminated. The new report will read BVX, where X will be the present numeral in miles or M for missing. Completion of this modification will allow the AUTOB Visibility to conform with FAA requirements.

### PROCEDURE:

1. Carefully pack the spare Backscatter Visibility Processor 1A2A5 PCB in aluminum foil or in a static-free plastic bag. Use the foil if you are not sure of the bag. Send the spare 1A2A5 to:

NOAA, National Weather Service

Engineering Division, W5141, Attn: Mintz

8060 13th Street

Silver Spring, Md. 20910

The board will be modified at this facility and returned to you. (The PCB you send will be the one you get back.) Be sure to tag the board indicating a return address.

- 2. After receiving the modified spare, exchange it with the board in the system as follows:
  - a. Turn off power to the AMOS processor. This is important as the next step removes a Printed Circuit Board with CMOS.

EHB-11 Issuance 81-3 3-16-81

- 2. b. Remove PCB 1A2A5, the Backscatter Visibility Processor, and take the necessary static electricity precautions.
  - c. Insert the modified 1A2A5 PCB.
  - d. Turn on power.
- 3. Verify proper operation. First readout is the test mode. Wait 10 minutes to receive actual readout.
- 4. Return old type module as described in Step 1, and repeat Steps 2, and 3, when modified 1A2A5 is again received.

This completes the modification.

### MANUAL CHANGES:

With pen-and-ink refer to AUTOB Appendix Page A34, Message Composer (6). Open the input and output of F6-F. Open the line from F4A-1 to F6D-9. Open the line at F5B-11. Connect F5B-12 to F6D-9. Ground junction points from E3A-1, 8, and 2 in the Data Buffer (7).

Remove Page A32 and replace with Page A32 Change I. Page 36, strike out the drawing at the top of page; add drawings No. S007-C1BVP-DR001, DR002, and AUTOB AMOS BVP Master Pattern (b).

Attachment: 1 ea. Page A32 Change I

Coders. A Nine Bit Shift Register composed of F5 and F4-A sets the timing for the Backscatter Visibility portion of the AUTOB message. When RESET goes high immediately after transmission, it directly resets the shift register putting all outputs in a low state. The l(B) signal enters the shift register and is shifted through the register producing the following sequential timing pulses:

```
LETTERS SHIFT (Shift 1)
B
V
LETTERS/FIGURES SHIFT (Shift 2)
CURRENT VISIBILITY
SPACE
```

The SPACE pulse is also the l(C) signal sent to the next printed circuit card in the sequence.

### 7 DATA BUFFER

Holds the current, maximum, and minimum visibility data for transmission. Latch C2 holds the current visibility data. It is clocked by the DATA VALID pulse. This clock pulse is inhibited when the Videograph is undergoing Self-Test Check or when the Message Composer is sending SHIFTS or CURRENTS. Latches B3 and B8 hold the maximum and minimum visibility data. They are clocked by the pulse at the end of the FIFO data circulation.

### 8 DATA MISSING REGISTER

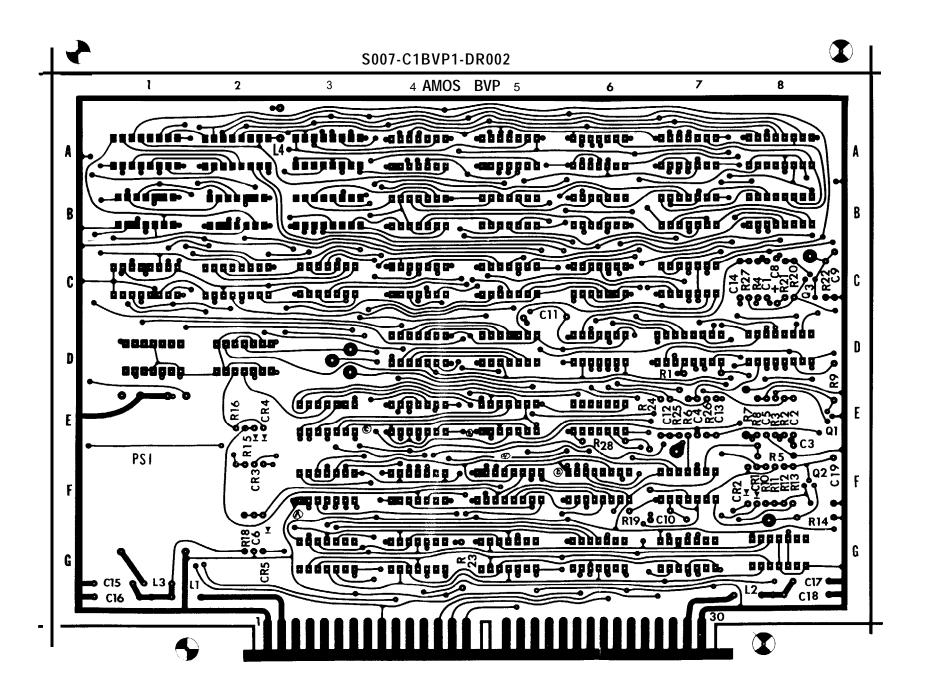
Indicates the status of data in the Buffer. Flip-flop E4-B contains the status of the current visibility, while flip-flop E4-A contains the status of the Maximum/Minimum Visibilities. When a RESTART occurs, none of the data are valid. This sets CURRENT MISSING (CM) flip-flop E4-B, which sets MAX/MIN MISSING (MMM) flip-flop E4-A. CM will be reset when valid data are clocked into the current buffer: MMM will be reset when valid data are clocked into the MAX/MIN Buffer. If data are missing when the message is being composed, the letter "M" will be sent for each missing datum. Thus if the current datum is missing, SHIFT 2 will send a LETTERS SHIFT, and CURRENT will send an M. If there is valid data, the Shifts will be FIGURE SHIFTS and the data will be numbers.

### 9 BCD CODER

Gates the parallel Current visibility values to the BCD Buss when queried by the Message Composer. Transmission will be inhibited by the Data Missing Register if data is missing.

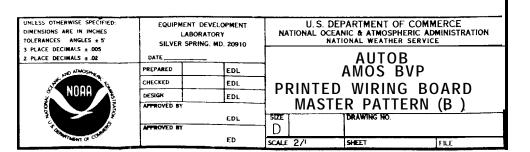
### 10 BAUDOT CODER

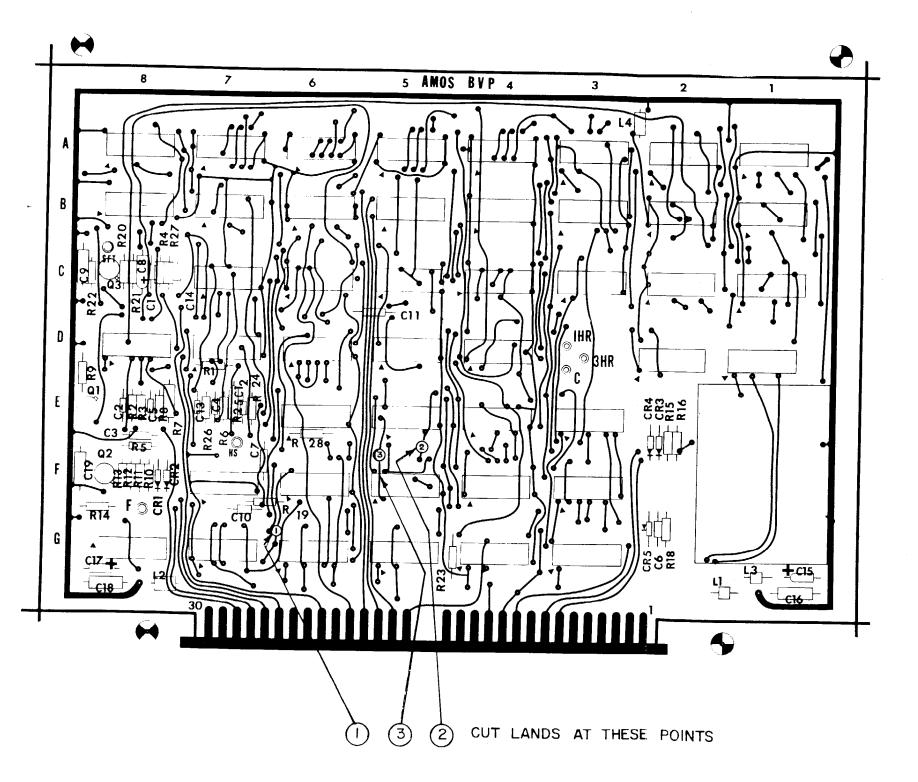
Gates shifts and letters to the BAUDOT BUSS and generates a BCD inhibit when gating characters to the BAUDOT BUSS. Gate F3-A determines whether SHIFT 2 will be a letters or figures shift. Gates F3-D, and E3-B put an M on the buss when appropriate.



### NOTES

- 1. THE ORIGINAL OF THIS DRAWING OR REPRODUCTION MADE BY A METHOD OR PROCESS WHICH WILL INSURE DIMENSIONAL STABILITY (THE LENGTH VARIATION IN ANY DIRECTION SHALL NOT EXCEED .001 INCH PER FOOT OF LENGTH) IS AN ACCURATE TEMPLATE TO BE USED TO PRODUCE PRINTED WIRING BOARD.
- 2. ANY PRINTS OF THIS DRAWING ARE FOR REF. ONLY
- 3. THIS TEMPLATE IS PREPARED TO AN ENLARGED SCALE AND MUST BE REDUCED TO THE ACTUAL SIZE TO PRODUCE PRINTED WIRING BOARD.





A								REVISION		_
44   43   75   RESISTOR, 402 K, 1%   1   1   1   1   1   1   1   1   1					0			By Down	By Date App	
44   43   75   RESISTOR, 402 K, 1%   1   1   1   1   1   1   1   1   1					A		FO PA	MKIS CIST	DAC 14 7	iI
13   R25					12.	J. Jan.			12M2:1:(_)	<u>a</u>
13   15   PESISTOR, 402K, 1%   1   1   1   1   1   1   1   1   1										
42 R24 RESISTOR, 200 1 1 4 1 R22 RESISTOR, 6200 1 1 4 1 R22 RESISTOR, 6200 1 1 4 1 R22 RESISTOR, 6200 1 1 4 RESISTOR, 6200 1 1 4 RESISTOR, 63% 1 1 4 1 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1						I				_
42 R24 RESISTOR, 200   1	43	R25	RESISTOR, 402K, 1%	1		1		1		
41 R22 RESISTOR, 6200   1	42	R 24		1		$\neg$		1		
40 R14 RESISTOR, 10K   1   1   3   8   8   7   RESISTOR, 23K   1   1   1   1   1   1   1   1   1	41	R22				$\neg$	1			
39 R8 RESISTOR, 43K					<del>-</del>			· <del>  · · · · · · · · · · · · · · · · · ·</del>		
36 R7							<del></del>			
37   R4   RESISTOR, 100					_+	-	<del></del>	-		
RIPLE   RIPLE   RESISTOR, GZK		+								
R72	3 /			13						
36 R3	_		<u>دم</u>					<b>_</b>		
35 RZ, RS   RESISTOR, IM   6   8   9   8   8   8   8   8   8   8   8								[	_	
RP3,R19				1						_
R2,723	35	RZ,R	RESISTOR, 1M	6	,			1		
R2723   R1 R1 R1 R2   P			0	1-			$\neg$	†		
34 RI, RIO RESISTOR, ISIK 9 9 RIO RIO RESISTOR, ISIK 9 9 RIO RIO RESISTOR, ISIK 9 9 RIO RIO RIO RESISTOR, ISIK 81 RIO RIO RIO RESISTOR, ISIK 81 RIO RIO RIO RESISTOR 12 RIO RESISTOR 12 RIO RESISTOR 12 RIO RESISTOR 13 RIO RESISTOR 1 CAPACITOR, 10 O PESSO 1 CAPACITOR, 10 O PESSO 1 CAPACITOR, ISIK 50 O PESSO		R27.2		+	1		+	<del>                                     </del>		
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RIB_RZI   R2B				+	+	+		+		
R26				+	+		——	+		
33 C15CIT CAPACITOR, 12 LF COV 10% Z 7320A126K0004  32 C13 CAPACITOR, 10 OF 730V 1 C76CIOIK 16544 JSCC  C18(19) C18(19) C18(10) C18(10) C18(10) C18(10)  30 C8 CAPACITOR, 10 LF, 50V 10 C C18(19)  30 C8 CAPACITOR, 10 LF, 50V 2 C22CIO3K 16544 USSCC  29 C5,CC CAPACITOR, 0.1 LF, 50V 2 C22CIO3K 16544 USSCC  29 C5,CC CAPACITOR, 0.0 LF, 50V 2 C22CIO3K 16544 USSCC  C18(19) C18(18)				4_	<del> </del>			<del> </del>		
32   C13   CAPACITOR, 100 PF/SOV   1   C7CC, 101 K   1654   JSCC   C18 (19   C18 (17 K), 50V /10%   4   C72C (10 K)   1654   JSCC   C18 (19   C18 (17 K), 50V /10%   4   C72C (10 K)   1654   JSCC   C18 (19   C18 (17 K), 50V /10%   4   C72C (10 K)   1654   JSCC   C18 (19 K)   C18 (17 K)   C	77		T 64816 TOP 12	4	<del>                                     </del>		┵—.			
1	<u> 33</u>	C15,C1	1 CAPACITOK, 12 4 F/ GV/10%							
31 C2 C104K   C56C   C4PACITOR   1			CAPACITOR, 100 PF/50V	11	C 22 C 101 K	< ] _				
C18,C19	31	C9,C14	CAPACITOR, 1 Hf, 50V/10%	14						_
29 CS.CG CAPACITOR, O.J. A.F. SOV 28 C1C.CG CAPACITOR, O.O. A.F. 9 29 C22 C102 K 20 C102 TRANSISTOR 20 C103 TRANSISTOR 21 C103 TRANSISTOR 22 C104 TRANSISTOR 23 C105 TRANSISTOR 24 L1, L2 FERTITE BEAD 25 C11 TRANSISTOR 26 C105 TEST TERMINAL 27 C11 TEST TERMINAL 28 C11 TEST TERMINAL 29 C12 C13 TEST TERMINAL 20 C13 C13 TEST TERMINAL 20 C13 C13 TEST TERMINAL 20 C13 C13 TEST TERMINAL 21 C14 C15 TEST TERMINAL 21 C14 C15 TEST TERMINAL 22 C15 TEST TERMINAL 23 D3 24 C16 C16 TEST TERMINAL 25 C17 TEST TERMINAL 26 C17 C17 TEST TERMINAL 27 C17 TEST TERMINAL 28 C18 TEST TERMINAL 29 C18 C18 TEST TERMINAL 20 C18 C18 TEST TERMINAL 21 C18 C18 TEST TERMINAL 21 C18 C18 TEST TERMINAL 21 C18 C18 TEST TERMINAL 22 C18 C18 TEST TERMINAL 23 D3 TEST TERMINAL 24 L1, L2 FERTITE BEAD 25 C18 TEST TERMINAL 26 C18 C18 TEST TERMINAL 27 C18 TEST TERMINAL 28 C19 C18 TEST TERMINAL 29 C18 C18 TEST TERMINAL 20 C18 C18 TEST TERMINAL 21 C18 C18 TEST TEST TEST TEST TEST TEST TEST TES		C18,C1	9		1		1	1		
29 CS.G. CAPACITOR, OI AF, SOV 28 C12.33 CAPACITOR, OOI AF 3 C22CIOSK 1654-05CC C1(12,M) C4(2)CD	30	C8	CAPACITOR, 2.2 uf/20V	1 1	T310A125402	AS	0530	2		
28 CILCLG GAPACITOR, OOI AF  (46.00  CILIZAM  CRITICAD	29	C5.C6	CAPACITOR, OLUF SON							
C4,C106	28	C1C2C	CAPACITOR OOLf	-+						
CI1/2/M   27 CRICK2   DIODE   5 IN457A				+ -	CEECIOER	-	1034	0300		
27 (R1(R2 DIODE   5 IN457A   6 R3(R4   6 R5)   7 R4 R3 R4   7 R4				+-	<del> </del>					
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Z2				1		$\perp$				
25 Q1 TRANSISTOR 1 ZNZZZZA 24 LL, Z FERTITE BEAD 4 L3, L4 L4, L5, L5, L5, L5, L5, L5, L5, L5, L5, L5	_									
25 Q1 TRANSISTOR 1 ZNZZZZA  24 LI, LZ FERRITE BEAD 4  L3, L4  23 D3 EYELET 3  SFT  21 B5, B6, G3 DUAL EXPANDER 9 SP300A 18324 SIGNETICS  G4, 65, G6  C1G, BM  C1 AZ FIFO SHIFT REGISTER 1 3341PC 07263 FAIRCHILD  C2 F, T OR GATE 1 CD4071BE 1 CD4071BE 1 CD4015AE 1 CD4001AE 1 CD4	26	$QZ_jQ3$	TRANSISTOR	2	2N2907A	1				
1   1   2   FERRITE BEAD				_		$\neg$		†		
L3,L4   23 D3   EYELET   3   3   1593-2   5FT   22 F,H5   TEST TERMINAL   3   1593-2   5FT   21   B5,B6,G   DUAL EXPANDER   9   SP300A   18324   SIGNETICS   G4,65,G   G7,68M   20   A2   FIFO SHIFT REGISTER   1   CD4071BE   1   CD	24	LILZ	FERRITE BEAD	-			+	<del>                                     </del>		
23   D3   EYELET   3   3   1593-2				† <u> </u>	<del> </del>	+	+	<del> </del>		
22   F, HS   TEST TERMINAL   3   1593-2				1 -	<del>                                     </del>	+	+			
SFT					1502 2	-+-	<del> </del>	<del></del>		
21 85,86,63 DUAL EXPANDER 9 SP300A 18324 SIGNETICS  (4,65,66 (7,08,0M) 20 AZ FIFC SHIFT REGISTER 1 CD4071BE 18 FS DUAL 4-STAGE SHIFT REGISTER 1 CD4015 AE 18 FS DUAL 4-STAGE SHIFT REGISTER 1 CD4025 AE 19 C7 TRIPLE 3-INPUT NOR GATE 1 CD4025 AE 19 D7 HEX BUFFER/INVERT. CONVERTER 1 CD4001AE 10 D7 HEX BUFFER/INVERT. CONVERTER 1 CD4001AE 11 D5 B-INPUT NOR GATE 1 CD4001AE 12 D2 QUAD 2-INPUT NAND 1 CD4024 AE 13 D4,E6 7 STAGE RIPPLE COUNTER 2 CD4024 AE 14 D5 B-INPUT NAND TRIGGER 1 CD403BE 15 DR GATE, RIPLE 3-INPUT 1 CD4075BE 16 D7 HEX BUFFER/INVERT. CONVERTER 1 CD4024 AE 17 CD4075BE 18 B3,86,00 QUAD CLOCKED "D" LATCH 3 CD4029 AE 19 CI BINARY/DECADE, UP/DN COUNTER 1 CD4029 AE 19 B3,88,00 QUAD CLOCKED "D" LATCH 3 CD4024 AE 19 CI BINARY/DECADE, UP/DN COUNTER 1 CD4029 AE 19 CI BINARY/DECADE "D" LATCH 3 CD4042 AE 19 CI BINARY/DECADE "D" LATCH 3 CD4042 AE 19 CI CD403BD 7 CD4013AE 10 CJ605				+ ~.	1333-6	-	+	<del> </del>		
G4,65,66   G7,68   G				<del>  _</del>		<b>-</b>				
C749M   C0 AZ	- +5	22,06,43	WAL EXPANDER	3	5P300A		18 324	SIGNETIC	5	
A2						1	1			
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B FS			OR GATE	1		1	1			
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G D7	_						<del> </del>	<del></del>	<del></del>	
5 DG QUAD 2-INPUT NOR 1 CD4001AE 4 D5 8-INPUT NOR GATE 1 CD4078AE 3 D4,EG 7 STAGE RIPPLE COUNTER 2 CD4024AE 2 D2 QUAD 2-INPUT NAND TRIGGER 1 CD4093BE 1 E3 OR GATE, R.PLE 3-INPUT 1 CD4075BE 0 CG TRIPLE 3-INPUT NAND 1 CD4023AE 9 CI BINARY/DECADE,UP/DN COUNTER 1 CD4029AE 8 B388CZ QUAD CLOCKED "D" LATCH 3 CD4042AE 7 B1,B2 QUAD BILATERAL SWITCH 2 CD401GAE 6 A3,A8 4-BIT COMPARATOR 2 CD4063BD 5 A4,A5,A6 "D" TYPE FLIP-FLOP 7 CD4013AE A7,C4,E4 F4 4 B4B7C3 AND GATE, CUAD 2-NPUT 6 CD4081BE (5,E5,F3 3 A1,DB/F6 HEX BUFFER/CONVERTER 3 CD4050AE 2 DC-DC CONVERTER 1 BPM 12/25-D5 02021 JATEL SYSTEMS 6 DCS 000 DESCRIPTION 0 PARTOR 0 SIZE DORN ON MATERIAL			HEX BUFFER INVERT CONVERTOR	-	CDAGAGA	+	+			
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F4	_		U TITE PLIP PLUP	_/_	CU4013AE	1	<b></b>			J
4 84,87,C3 AND GATE, OUAD 2- N PUT 6 CD4081BE  C5,E5,F3  3 AI,D8,F6 HEX BUFFER/CONVERTER 3 CD4.05.0AE 02735 RCA  DC-DC CONVERTER 1 BPM 12/25-05 02021 DATEL SYSTEMS  1 BVP PRINTED WIRING BOARD 1 S007-089/P1-08703 D  BLEC NET 08 DESCRIPTION 07 PART OR DENTIFYING NO SIZE NORTH OR MATERIAL						$\perp$	<u>                                     </u>			$\neg$
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NO CLEC REF HOMENCLATURE QTY FART OR DWG CODE SPECIFICATION OR DESCRIPTION REQU. IDENTIFYING NO. SIZE IDENT.	-	BVP	PRINTED WIRING BOARD				04041	CHIEL SYS	IEM5	_1
O. DES OR DESCRIPTION REQU. INENTIFYING NO. SIZE IDENT. OR MATERIAL.	-			-		51 D	1			
MESON INCHIEF THROUGH SIZE IDENT OR MATERIAL			NOMENCLATURE OR DESCRIPTION							1
LIST OF MATERIAL	Щ.					SIZE	IDENT	OR MATI	ERIAL	_1
			LIST	OF MA	TERIAL					7

UNLESS OTHERWISE SPECIFIED,
DIMENSIONS ARE IN INCHES
TOLERANCES. ANGLES ± 5
3 PLACE DECIMALS ± .02
2 PLACE DECIMALS ± .02

EQUIPMENT DEVELOPMENT
LABORATORY
SILVER SPRING, MD. 20910
DATE 11-1-76
PREPARED COMPTON EDL
CHECKED (LECKED)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

AMOS III-73
BACKSCATTER VISIBILITY
PROCESSING (BVP)
ASSEMBLY

REVISION

APPROVED BY

SCALE



# UNITED STATES DEPARTMER1T QF COMMERCE National Oceanic and Atmospheric Administration NATIONAL WEATHER SERVICE Silver Spring, Md. 20910

0A/W5141 - JM

### PRELIMINARY

T0:

All NWS Regional Headquarters, Area Electronics Supervisors,

and Electronics Technicians (EHB-11 Distribution)

FROM:

0/AW51 - J. M. St. Clair

SUBJECT:

Transmittal Memorandum for Engineering Handbook No. 11,

Issuance 81-

### 1. Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment, Section 3.1: Errata Sheet No. 1 to AUTOB Modification No. 2 and No. 3.

### 2. Summary:

Errata Sheet No 1 instructs Electronics Technicians on pen-and-ink changes to AUTOB Modification No. 2 and No. 3.

### 3. Effect on Other Instructions:

None.

EHB-11 Issuance 81-





PAGE NUMBERS

FOR ODD PAGES

SECTION 3.1

## 

AUTOMATIC OBSERVING EQUIPMENT (AUTOB)

Engineering Division  $0\,\text{A/W}5\,1\,4$ 

### ERRATA SHEET NO. 1 TO AUTOB MOD NOTE NO. 2

AUTOB MOD NOTE NO. 2, Page 1, General paragraph: An error exists under thresholds of visibility:

The line that reads: "1 = 1-15/16 to 2-7/8 miles." should read: "2 = 1-15/16 to 2-7/8 miles."

On sample form WS Form H-28, remarks column:

Change the date MOD No. 2 should be reported to: June 15, 1981.

### ERRATA SHEET NO. 1 TO AUTOB MOD NOTE NO. 3

On sample form WS Form H-28, remarks column:

Change the date MOD No. 3 should be reported to: June 15, 1981.

EHB-11 Issuance 81-

1



## UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration NATIONAL WEATHER SERVICE

Silver Spring, Md. 20910

0A/W5141- JM

July 1, 1982

T0:

All NWS Regional Headquarters. Area Electronics Supervisors. and Electronics Technicians (EHB-11 Distribution)

FROM:

0A/W51 Michael St. Clair

SUBJECT:

Transmittal Memorandum for Engineering Handbook No. 11

### 1. Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment, Section 3.1; AUTOB Modification Note No. 4: Disable Phase Discriminator.

#### 2. Summary:

This modification will allow the AUTOB to receive and process the RBC Detector Output, independent of shutter phase.

### 3. Effect on Other Instructions:

Refer to AUTOB Modification Note No. 4, Manual Changes.

### 4. Reporting Equipment Modifications:

Target date for reporting completion of this modification is August 20. 1982.

All completed modifications shall be reported on H-28 Engineering Progress Report Form, in accordance with EHB-4, Part 2.

### Certification Statement:

This modification has been successfully field tested for system operational integrity.

> EHB-11 Issuance 82-4



Engineering Division OA/W514

AUTOB MODIFICATION NOTE NO. 4 (For Electronics Technicians)

SUBJECT : Di sabl e Phase Di scri mi nator

PURPOSE : To allow the AUTOB to receive and process the RBC Detector

Output, independent of shutter phase

EQUIPMENT AFFECTED : All AUTOB Systems

PARTS REQUIRED : 2 ea. 1N277 (equivalent to 1N48) Diode

MOD PROCUREMENT : Parts for this modification will be sent to all AUTOB

stations automatically

SPECIAL TOOLS

REQUIRED : None

TEST EQUIPMENT

REQUIRED : None

TIME REQUIRED : One work hour

<u>General</u>: - This modification will allow the AUTOB to receive and process the RBC detector output, independent of shutter phase. It replaces the phase discriminator portion with a diode full wave bridge. After the modification is completed, only the synchronous detector and low pass filter portions of the circuit are used.

### PROCEDURE:

- 1. Remove the top and bottom cover plates from model 3132 discriminator. While consulting the schematic at the end of the discriminator manual (Drawing No. 41352, Sheet 2), locate transistors Q7 and Q8. Carefully unsolder these FETs and remove from board.
- 2. See Figure 1. Solder the cathode of one of the supplied 1N277 germanium diodes to the vacated source terminal pad of Q7. Solder the cathode of the second 1N277, the source pad of Q8 on the PCB. Solder the anode to the drain terminal pad.

This completes the modifications.

### MANUAL CHANGES:

With pen-and-ink refer to Manual 8-118, I thaco Discriminator Model 3120, Drawing No. 41352, Sheet 2. Change drawing as per Figure 1. On Page 6-5, strike out Q7 and Q8. On Page 6-4 under reference designation, add CR16 and CR17. Under description, add Diode. Under part number, add 1N277 or 1N48.

Attachment: Figure 1

EHB-11 Issuance 82-4 7-1-82

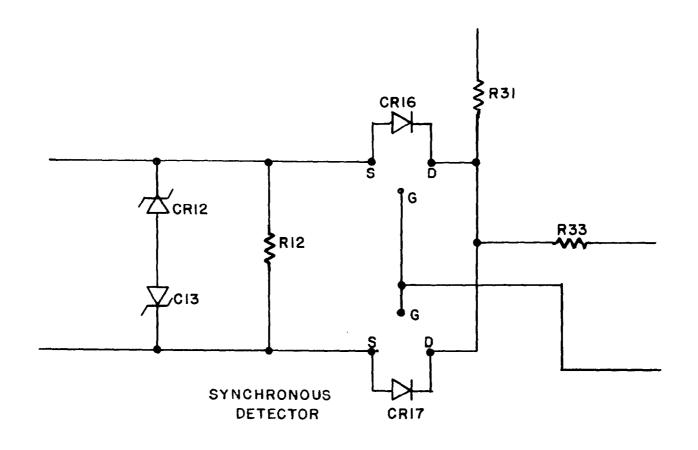


FIGURE 1



# UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration NATIONAL WEATHER SERVICE Silver Spring, Md. 20910

OA/W5141- JM

July 1, 1982

T0:

All NWS Regional Headquarters, Area Electronics Supervisors, and Electronics Technicians (EHB-11 Distribution)

FROM:

**0A**0A7W J. Michael St.

SUBJECT:

Transmittal Memorandum for Engineering Handbook No. 11

### 1. Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment, Section 3.1; AUTOB Modification Note No. 4: Disable Phase Discriminator.

### 2. Summary:

This modification will allow the AUTOB to receive and process the RBC Detector Output, independent of shutter phase.

### 3. Effect on Other Instructions:

Refer to AUTOB Modification Note No. 4, Manual Changes.

### Reporting Equipment Modifications:

Target date for reporting completion of this modification is August 20, 1982.

All completed modifications shall be reported on H-28 Engineering Progress Report Form, in accordance with EHB-4, Part 2.

### 5. Certification Statement:

This modification has been successfully field tested for system operational integrity.

> EHB-11 Issuance 82-4



Engineering Division OA/W514

AUTOB MODIFICATION NOTE NO. 4 (For Electronics Technicians)

SUBJECT : Di sable Phase Di scri mi nator

PURPOSE : To allow the AUTOB to receive and process the RBC Detector

Output, independent of shutter phase

EQUIPMENT AFFECTED : ALL AUTOB Systems

PARTS REQUIRED : 2ea. 1N277 (equivalent to 1N48) Diode

MOD PROCUREMENT : Parts for this modification will be sent to all AUTOB

stations automatically

SPECIAL TOOLS

REQUIRED : None

TEST EQUIPMENT

REQUIRED : None

TIME REQUIRED : One work hour

<u>General:</u> - This modification will allow the AUTOB to receive and process the RBC detector output, independent of shutter phase. It replaces the phase discriminator portion with a diode full wave bridge. After the modification is completed, only the synchronous detector and low pass filter portions of the circuit are used.

### PROCEDURE:

- 1. Remove the top and bottom cover plates from model 3132 discriminator. While consulting the schematic at the end of the discriminator manual (Drawing No. 41352, Sheet 2), locate transistors Q7 and Q8. Carefully unsolder these FETs and remove from board.
- 2. See Figure 1. Solder the cathode of one of the supplied 1N277 germanium diodes to the vacated source terminal pad of Q7. Solder the cathode of the second 1N277, the source pad of Q8 on the PCB. Solder the anode to the drain terminal pad.

This completes the modifications.

### MANUAL CHANGES:

With pen-and-ink refer to Manual 8-118, I thaco Discriminator Model 3120, Drawing No. 41352, Sheet 2. Change drawing as per Figure 1. On Page 6-5, strike out Q7 and Q8. On Page 6-4 under reference designation, add CR16 and CR17. Under description, add Diode. Under part number, add 1N277 or 1N48.

Attachment: Figure 1

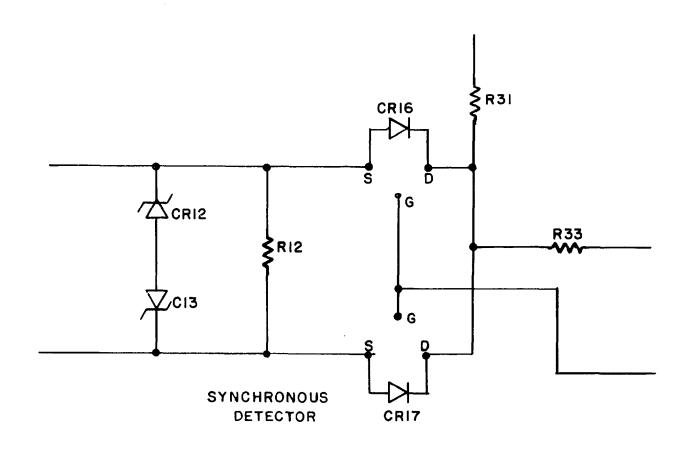


FIGURE 1

MODEL 3132 DISCRIMINATOR MODIFICATION OF DRAWING #41352, SHEET 2